New York State Department of Transportation
Office of Engineering

OPERATIONAL PLAN

SFY 1996-97 and Beyond

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TECHNICAL SERVICES DIVISION
OPERATIONAL PLAN FOR SFY 1996-97 AND BEYOND

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TECHNICAL SERVICES DIVISION
OPERATIONAL PLAN FOR SFY 1996-97 AND BEYOND

I. PLAN OF ACTION

INTRODUCTION

The Operational Plan for Technical Services contains and describes the priorities, issues and goals for the program area for SFY 1996-97 and beyond. It is the result of an Operational Planning Process which invited input from our employees and the Regions.

The Technical Services program provides materials and geotechnical engineering services and targeted transportation research to the Department through the:

- management and operation of a materials quality assurance program.
- development, recommendation and implementation of engineering policies, standards and specifications.
- conduct of specialized studies requiring investigations, testing and analysis, utilizing both internal and external resources

These services are provided through the Materials, Geotechnical Engineering, and Transportation Research and Development Bureaus in the Central Office in conjunction with the Technical Services, Materials and Geotechnical units in the Regions. The Technical Services program is founded on a multi-million dollar investment in laboratories and equipment in both the Central Office and the Regions and a dedicated, capable staff. There are approximately 270 employees in the Division and almost 300 in the Regional counterparts. In the Regions, the program receives its staffing through the Design and Construction program budgets.

The program serves all elements of the Department as well as some external clients because of the program units' expertise and facilities. The majority of services, now provided, directly support the capital program and this, along with research and development, are the most significant parts of the mission.

The strength of our Division clearly lies within its people. We are a Division of experts in geology, chemistry, pavement design, pavement materials, structural engineering, geosynthetics, materials sciences, foundation engineering, physical testing, decision sciences, quality assurance and many other disciplines.

Our work is comprised of four major activities; Design and Construction support of the capital program, development of engineering and transportation policies, standards and specifications, and training.

Sixty percent of our resources are dedicated to design and construction support. The Division provides the management of a quality assurance program for all the materials incorporated into Department projects. We engage in the direct design and production of contract plans for geotechnical elements and engineering consultation used as vital input to contract plan development by others in both the Central and Regional Offices. In addition, we provide direct support to projects under construction in the form of consultation to Regional field engineers engaged in both Capital and Maintenance projects.

To any observer of trends in the field of transportation, it is obvious the future will require much more sophistication than the past. The materials, designs, specifications, processes, techniques, and contractual arrangements will all require more sophistication on the part of the Department, its consultants, its contractors and their suppliers.

In the past, the development and continuous improvement of Department products and processes has been supported by 30% of our resources. This activity is vital to the future success of the Department and must be supported in the budget process with appropriate personal and non-personal resources. In the near term, it will be more difficult to allocate resources to these activities, but they must remain a priority for both this Division and the Department. The emerging issue of steel corrosion problems is one example of an activity that needs to continue to be a focus of attention to ensure proper maintenance and design of pipe, piles and structural elements.

Finally, sophistication requires training. Training of both the people in this Division and the transfer of technology to others by the people in this Division. To prepare our people to meet the challenges we will face in the future means they must be continuously trained in the present. And they must have the time and resources to train others. Fully 10% of our personal service resources and 10% of travel funds is spent on training.

The Department's priorities, as contained in its budget presentation are clear:

- to ensure the safety of the travelling public:
- to preserve and maintain a balanced transportation system;
- to continue the capital construction program to meet critical infrastructure needs and promote economic growth, and
- to maximize program effectiveness

It is equally clear that the mission of this Division directly supports the priority activities of the Department.

However, given the resources we have, we will be challenged to effectively deliver the full range of services as contained in our mission statement.

The capital program is expected to grow from about $1.3 billion in SFY 96/97 to more than $1.4 billion in SFY 99/2000. To respond fully to such a program size, we would need more than 300 people, yet our target for the end of this fiscal year is little more than 260.

Our core production activities center on direct support of the capital design and construction program. Given the importance and magnitude of these responsibilities, the major fraction of our resources has, historically, been dedicated to these efforts. These programs will remain the Division's first priority.

Our second essential mission is to provide for development and continuous improvement of many of the Department's products and processes. The realities of our resource situation poses a direct threat to our ability to provide these services.

In order to provide a balanced response to our mission statement we will need to do two things:

- First, in our direct support of the capital program, we will continue to critically look at what we do and how we do it with an eye toward answering the tough questions of should we do it?, and if so, should we change how we do it?

- Second, since our ability to provide for development and improvement is severely limited, we must be very careful how we spend the available resources. We simply cannot do everything that needs to be done. Therefore, when we make choices, we must choose those activities which have the most promise to maximize program effectiveness in support of the Department's priorities. As a corollary, for those considered of lesser impact, important as they may be, we must have the courage to say **no**, both to ourselves and to our clients.

Despite the challenges we faced last year, we remain proud of our performance and our accomplishments. We are disappointed that we may not be able to do all that we might have in the coming year, yet, we are committed to carefully choose that which we can do in order to provide maximum benefits to Department programs.

RECENT ACHIEVEMENTS

The Division takes justifiable pride in its accomplishments; both in terms of its production and continuous improvement achievements.

A sampling of the production activities follows:

Number	Activity
880	NYSDOT employees trained by Materials Bureau
2,192	NYSDOT employees trained by the Geotechnical Engineering Bureau
4,543	Transactions by Research Library
10	Research Newsletters
2,981	Soil Sample Identification Tests
193	Bridge Foundation Designs
499	Evaluations of Materials Plants & Facilities
225	Soil Consolidation Tests
127	Wall Designs
69	Geologic Survey & Analysis of Rock Cut Slopes
152	Materials Project Level Design Consultations
496	General Roadway Inspections
22	Revisions to Geotechnical Specifications & Standards
52	Research Proposals received and rated
174	Materials QA procedures developed/revised
114,933	Materials tests completed on 30,818 samples
19	Research Publications produced
2,836	Geosynthetic tests completed
4,029	Granular Materials Soils tests
49	Roadway Foundation designs
179	Materials Construction Evaluations
703	Soil Strength Tests
614	Topsoil Tests

A sampling of our continuous improvement activities follows:

QC/QA PROCEDURES FOR HOT MIX ASPHALT

Materials Bureau Engineers continue to progress the implementation of the QC/QA specification for Hot Mix Asphalt production. The final specification, Section 402 - Quality Control Asphalt Concrete, was adopted by the Department with support from the Industry in January 1996. This specification incorporated knowledge gained from numerous pilot projects. This specification is scheduled to take effect on all projects starting with the May 23, 1996 letting date. The quantity adjustment factors included in this specification will be phased in over four years; 0% in 1996, 25% in 1997, 50% in 1998 and 100% in 1999.

A new hot mix asphalt technician certification program was started this spring at Alfred State University. This program follows the American Concrete Institute Portland Cement Concrete certification format utilizing AASHTO specifications and Department Materials Methods. A manual was developed as a study/reference guide and includes all the information covered by the proficiency and written exam. Forty-eight Department employees were certified this spring. The certification period will be five years.

Informational seminars on QC/QA implementation sponsored by the New York State Asphalt Pavement Association and the Department were held in Rochester, Utica, Kingston and Long Island. Six hundred participants attended, consisting of asphalt producers, contractors, testing agencies and Regional personnel.

SUPERPAVE IMPLEMENTATION

NYSDOT has adopted a formal *SUPERPAVE* (Superior Performing Pavement) Implementation Schedule that was developed by the Materials Bureau and approved by the Chief Engineer. This schedule was developed to meet many needs, including: to determine equipment needs and costs, to establish a time table for equipment purchase, to estimate personnel requirements to meet the implementation schedule, and to provide the asphalt industry with NYSDOT's timetable for the adoption of *SUPERPAVE*. The schedule targets full *SUPERPAVE* implementation for all contracts planned for construction in 1999, with a phased implementation approach taken in 1997 and 1998. The plan requires that 20% of the 1997 projects and 50% of the 1998 projects in each Region be constructed using the full *SUPERPAVE* system. Further, the plan requires the use of Performance Graded Binders on all projects containing Hot Mix Asphalt items let for construction in 1998. The implementation schedule which was adopted is one of the first plans of its kind developed in the United States.

NYSDOT will construct eleven *SUPERPAVE* Pilot Projects in 1996, two in Region 1 and one each in Regions 2 through 10. These projects will utilize both the *SUPERPAVE* Performance Graded Binder Specification and the *SUPERPAVE* Mixture Design System. In preparation for these projects the Materials Bureau prepared the special specifications and Materials Method 5.16, *SUPERPAVE* Hot Mix Asphalt Mixture Design and Mixture Verification Procedures, which were required for the construction of the pilot projects. Additionally, ten of the pilot projects includes an item for a *SUPERPAVE* Gyratory Compactor which will be used by the Contractor during construction of the project and become the property of the State at the completion of the project. The Gyratory Compactor is the cornerstone of the *SUPERPAVE* mixture design system. By obtaining a Gyratory Compactor for each Region early in the *SUPERPAVE* implementation process our ability to quickly expand the use of the *SUPERPAVE* system is greatly enhanced.

SUPERPAVE is intended to combat temperature cracking, rutting and fatigue cracking in Asphalt Pavements. Its implementation by NYSDOT is expected to return several hundred million dollars in savings over the next generation.

NEW RETAINING WALL POLICY

In January 1995, a task force was formed with representatives from the Materials Bureau, Structures Division, and Design Quality Assurance Bureau and chaired by Todd Dickson of the Geotechnical Engineering Bureau.

The Task Force has developed to completion two documents to cover the issues involved. The first, titled "Procedure for Pre-Approval of Proprietary Retaining Wall Systems," deals with the process that vendors and NYSDOT must follow in reviewing and pre-approving commercially available retaining walls. It has five elements: 1) Procedure Overview: a brief description of the pre-approval procedure and its goals, 2) Definitions and Roles: a list of NYSDOT staff officers involved and their responsibilities in the process, with definitions of terms important in the policy, 3) Procedural Guidelines: general guidance for the vendor concerning information to be included in the pre-approval review package, the period required for its review by NYSDOT, and the conditions for accepting or rejecting a reviewed system, 4) Steps in the Pre-Approval Process: a complete step-by-step listing of procedures for all parties in the process, and 5) Related Official Issuances: a list of all NYSDOT documents used or referenced in the policy document.

The second policy, "Procedure for Selection and Use of Retaining Wall Systems," deals with proper selection and implementation of retaining walls based on needs of the specific project. It has eight parts: 1) policy objectives, 2) general requirements, 3) departmental agency roles and responsibilities, 4) the selection process, 5) the design process, 6) contract plan preparation and review, 7) bidding, and 8) construction control. Its' main thrust is to encourage designers to consider all available retaining-wall systems currently used by NYSDOT, and then rationally and systematically to eliminate those not meeting specific project requirements. Geometrics, physical restrictions, environmental concerns, aesthetics, and costs are among the numerous requirements to be considered. The policy identifies all possible project needs and places them in a logical sequence for consideration. Through this approach, designers optimize their chances of making the best choice of a retaining-wall system.

Once a retaining wall has been selected, this policy will guide designers through the appropriate design process (in-house design, approved lists, etc.), provide a proper approach for preparing and reviewing the wall scheme in a set of contract plans, identify the items and procedures for bidding the system, and describe the controls needed to construct the wall properly.

CHANGE IN HIGH FRICTION AGGREGATE SPECIFICATIONS FOR DOLOMITES

The Materials Bureau has extended the 1992 use restrictions on certain dolomite aggregates in asphalt friction top courses. The 1992 use restrictions were made in response to evidence that, under high traffic volume conditions, the Wappinger Dolomite was not meeting the Department's design friction requirement. The Wappinger is a low acid insoluble residue (AIR) dolomite quarried in the lower Hudson Valley and used in the Metropolitan New York area. The Department became aware, early in 1995, that the low-pavement-friction potential, addressed by the 1992 specification change was being realized in at least two sites on Long Island which were paved prior to the 1992 restrictions. Commissioner Daly's concern that the public's confidence be restored in the safety of New York's pavements led to the resurfacing of all potentially vulnerable roads in Long Island. In addition, Technical Services, the Materials Bureau and Traffic and Safety collaborated on a plan addressing the future of pavement friction. The results were the 1996 revised high friction aggregate specifications and a plan to monitor pavement conditions with additional friction testing and enhanced accident surveillance.

Specification changes went into effect immediately and will appear in contract proposals starting July, 25, 1996. Contracts in effect prior to that date will be considered for change on an individual basis. Specification changes require that all dolomite aggregates having an AIR of less than 17% must be blended with a minimum of 20% non-carbonate material (such as granite or sandstone) to meet high friction aggregate requirements for high traffic volume roads. High traffic roads have been defined as those with two or three lanes that carry 8,000 or more and 4 or more lanes that carry more than 13,000 vehicles per day. These are not today's traffic volumes, but are projected to the design life of the pavements. In addition, as a conservative measure, the entire Downstate area is considered to be "high traffic volume." An Engineering Bulletin and an Engineering Instruction have been issued. Pertinent revisions to the Design Manual have also been made.

WATERBORNE TRAFFIC PAINT

Materials Bureau staff have evaluated and developed specifications and guidelines for the use of a new, fast-drying waterborne traffic paint. New State and Federal air quality regulations will limit the quantity of volatile organic compounds (VOC's) that can be used in traffic paint formulations. To comply with these regulations a fast-drying waterborne traffic paint will be used by maintenance striping crews in most areas of the State. Guidelines that cover the striping equipment, application requirements, and other special concerns for the application of waterborne paint have been prepared and distributed. In addition, Materials Bureau engineers will visit each regional striping crew this season to answer questions and provide technical assistance.

CRACK SEALING

In conjunction with the Transportation Maintenance Division and the Liquid Asphalt Distributors Association (LADA), Materials Engineers developed new specifications in response to complaints from motorcyclists over the ride characteristics of crack sealing treatments. These specifications call for a narrower and thinner film above the crack (5.0 mm wide by less than 1 mm thick) than has been used before. The new specifications have been distributed to the regions for project use. The input by LADA should ensure greater acceptance of the new specifications by the contracting industry. Training sessions to more clearly identify candidate selections and techniques for crack sealing has been conducted for both Department and contractor personnel.

STREAMLINING PRECAST CONCRETE WORKING DRAWING REVIEWS

To clarify the precast working drawing routing review and approval process the Materials Bureau developed "Working Drawing Routing Sheets" for precast concrete: box culverts, highway barrier, structures barrier, and a general one for other type products. These sheets are initiated by the precaster and they stay with the drawing throughout its review and approval process. The front page identifies job specific information, provided by the precaster, and routing sequence and recommended approval signatures. The back of the routing sheet contains detailed information regarding each groups drawing review responsibilities. By keeping the routing sheet with the drawing submission, each reviewer's responsibilities and routing information is right at hand.

To improve communications a list of critical precast concrete contacts for both the Department Region's and precast industry were developed and distributed to all identified. This list, through improved communication, is intended to improve the quality of our contract plans and the precaster's drawings.

REHABILITATION OF FAULTED RIGID PAVEMENTS

The Transportation Research and Development Bureau published Report 166 entitled, "Overlays on Faulted Rigid Pavements". This report summarizes the performance of flexible overlays on faulted rigid pavements and determines other rehabilitation procedures that were effective in extending pavement service life. During this project, a mathematical model and an accompanying computer program called NYTEMP were developed to predict temperature distribution within a pavement. Based on the studies' findings, faulting recurrence in overlays was generally small. Overlay thickness was the dominant factor affecting faulting return. Sawed-and-sealed joints in the overlay performed well except over expansion joints. The magnitude of initial concrete faulting appeared to affect the amount of reflective cracking, as well as performance of sawed-and-sealed joints in the overlay. Thicker overlays did reduce seasonal movement, temperature gradient, and critical stress of underlying slabs.

SOIL LIQUEFACTION POTENTIAL MANUAL

Liquefaction of foundation soils has been a worldwide major cause of failures in bridges, embankments, natural slopes, buildings, dams, and foundations. The term encompasses all phenomena that result in a complete loss of shearing resistance or development of excessive strains due to pore water pressure built-up in the soil skeleton by either static or seismic loading. The soil types most susceptible to liquefaction are clean sands and silty sands. The importance of liquefaction of sands induced by static loading has been recognized since 1936, but the subject of liquefaction of sands by seismic loading received little attention until 1964, when major earthquakes shook Anchorage, Alaska, and Niigata, Japan.

To evaluate the liquefaction potential of bridge foundations, the Geotechnical Engineering Bureau recently prepared a design manual titled "Liquefaction Potential of Cohesionless Soils. " It provides basic information about liquefaction of such soils under seismic loading, and presents the most widely accepted procedures for evaluating soil liquefaction potential, for analyzing stability of embankments and slopes against flow failures, and for estimating earthquake-induced settlements resulting from liquefaction in cohesionless soil deposits. Sample problems demonstrating each design procedure are included as appendices. A brief review is also presented of the seismicity of New York State. If evaluated foundation soils are found to be potentially liquefiable, treatment measures to reduce soil liquefaction susceptibility are available and are discussed in the manual.

IMPLEMENTATION OF GEOGRAPHIC INFORMATION SYSTEMS (GIS)

In February 1995, NYSDOT began using new geographic information systems (GIS), with the Geotechnical Engineering Bureau as one of the Main Office bureaus helping to coordinate GIS activities for the Office of Engineering. GIS's are combinations of computer hardware, software, and people trained to create, maintain, upgrade, and provide access to databases of information that can be tied to specific geographic locations.

One GIS application used by the geotechnical engineers is analyzing relationships between state project locations and granular materials needed for those projects. Data describing material quality, location, and availability can be linked to a project's geographic location to help decide which sources, available locally within a known distance from a site, are suitable for use.

GIS software is also used to create geographic catalogs. Geotechnical engineers are responsible for falling-weight-deflectometer (FWD) tests for many NYSDOT projects as part of the state's pavement-monitoring program. This software allows users to retrieve test results describing the FWD sites by simply clicking on the graphics representing those sites.

Other GIS software applications being developed by the geotechnical staff include:

- Locating steel culverts and bridges supported on steel piles to study corrosion potential in their soil environments,

- Terrain reconnaissance using electronic agricultural soil-mapping information,

- Rock hazard ratings and remediation status for all rock slopes in the NYSDOT inventory system, and

- Locations and pertinent information from statewide subsurface explorations (borings).

FORWARD LIGHTING CONFIGURATIONS FOR SNOWPLOWS

Visibility during plowing operations is often poor, and is further diminished by backscatter glare from the snowplow's own headlights as well as glare from the lights of oncoming traffic. During the past two winters, Transportation Research and Development Bureau researchers have been working with Transportation Maintenance and Equipment Management Divisions in developing reliable field-testing procedures and analysis methods to identify lighting configurations which would improve visibility for plow operators. Of the eight lighting configurations tested, two were identified and recommended as potential improvements over the current lighting configuration.

PAVEMENT DESIGN

The Transportation Research and Development Bureau published the report "Adapting the AASHTO Pavement Design Guide to New York State Conditions". This report summarizes new design principles and procedures published and recommended by AASHTO, and provides guidance in their use for new and/or reconstructed pavements subjected to New York State's weather and traffic conditions. The AASHTO Design Guide has now been implemented in part as official NYSDOT design procedure, as published in the "New York State Thickness Design Manual for New and Reconstructed Pavements."

NEW 50 YEAR PAVEMENT DESIGN DISPLAY

Many DOT personnel were involved with the preparation of a display for the State Fair in Syracuse. The display consisted of depicting the high performing pavements for the 21st Century showing the old and new designs for both rigid and flexible pavements. The display was designed by the Soil Mechanics Laboratory and fabricated by the Materials Bureau's Machine Shop and the Graphics Art Unit with input from the Office of Communications. The Subsurface Exploration Section obtained the necessary pavement cores, the General Soils Laboratory produced the gravel items and the Materials Bureau cut the cores and fabricated the treated permeable base. The display was used in the Main Office, at the State Fair in Syracuse, at the Annual AASHTO Meeting in Virginia, and as part of the DOT display for Engineers' Week at the Empire State Plaza.

POST-TENSIONED PRECAST CONCRETE "T" BEAM CORROSION INVESTIGATION

At the request of the Structures Division, the Materials Bureau conducted an extensive evaluation into the deterioration of two post-tensioned precast "T" beam structures: Route 22 over I-87 and I-87 over Route 9N in southern Clinton County. The evaluation involved a project field visit, coring to retrieve samples of the precast concrete and sampling of the post-tensioned steel strands for visual and laboratory evaluation. The evaluation showed that both the concrete and steel strands met the required specifications. The main problem was corrosion caused by shear key and subsequent bridge deck membrane failure, which allowed chloride contaminated water to run down the sides of the beams and concentrate chlorides at their bottom. At the beam's mid-span, concrete cover was minimal and the concentrated chlorides caused severe corrosion and metal section loss in the post-tensioned strands which eventually led to the beams' failure. A Materials Bureau Technical Report documents this effort.

SUFFERN INTERCHANGE BRIDGE

A bridge recently built near Suffern in Rockland County is part of an interchange from the State Thruway to I-287. After the construction of this four-span, doubly curved bridge was completed, two bridge girders were found uplifted at the abutment. The Structures Division requested the Transportation Research and Development Bureau to investigate the problem. The bridge with various load combinations was analyzed using Finite Element Modeling programs. Based on this analysis, Research staff designed the tie-down system which ameliorated the uplifting. The bridge has since been opened to traffic.

INSPECTION AND EVALUATION TOOLS FOR BRIDGES

This Research project studied the sensitivity of modal parameters (frequencies, damping ratios, mode shapes, and their derivatives) to changes in structural condition due to simulated damage. Results of laboratory and field tests now indicate that modal frequencies in conjunction with mode shapes may be useful in early determination of the existence of bridge damage of interest, although it is not yet possible to identify exact damage locations.

CONCRETE SEALING GUIDELINES

The Materials Bureau developed design guidelines and specifications for penetrating and coating type sealers used to seal water and chlorides from concrete. They are documented in EIs 95-053 and 95-054. Studies show that sealers are an effective means of protecting concrete from the ingress of water and chlorides, while having minimal effect on the concrete's ability to breathe (transfer water vapor). These sealers are relatively new and have been increasingly used over the last several years. Several regions have developed their own specifications, and as a result their use of sealers has been inconsistent and in some cases, improper. These instructions will result in more uniform and cost effective use of concrete sealers in maximizing the long term performance of concrete.

VERIFICATION OF EFFECTIVENESS OF EPOXY-COATED REBARS

A number of recent national studies cast doubt on the ability of epoxy coatings to provide long-term corrosion protection to steel in concrete exposed to chlorides. With this concern in mind, New York State, in-cooperation with Pennsylvania, initiated a regional pooled-funds study to investigate the field performance of epoxy-coated rebars. A comprehensive sampling plan encompassing the two states have been prepared and incorporated into the request for proposals (RFP) developed for this investigation. The RFP has been recently released by Pennsylvania DOT, and the contractor selection is underway.

INTERNATIONAL TECHNOLOGY TRANSFER

Ron Brown of the Materials Bureau participated in a technology transfer of information on Hot and Cold In-place Recycling of Bituminous Pavements with the Baltic States of Estonia, Latvia and Lithuania on May 15-19,1995. The presentations were a joint venture of the Finnish Road Administration and the United States Federal Highway Administration. The program was well received by the participants and the Baltic States will be working with their neighbor Finland to better understand the new concepts and cost effectiveness of pavement rehabilitation.

Paul St. John, also a Materials Bureau Engineer, travelled to India on his own time to provide assistance to the Federal Highway Administration (FHWA) in making the Strategic Highway Research Program (SHRP) results and products available to the national and international public and private sectors. Paul was asked by the FHWA to be part of a High Performance Concrete (HPC) team to share technical information and explore future, private, and public partnerships in India. The U.S. team visited India during February 1996 to offer the first international SHRP - HPC workshops in Delhi, Madras, Bombay and Baroda. In conjunction with the workshops, the team also visited project sites, laboratories, and held discussions with the Indian private and public sectors.

Robert J. Perry, Director of the Transportation Research & Development Bureau has been selected by AASHTO to serve as the United States representative to the Research Development Council of the Transportation Association of Canada. In this role he generally attends three to four meetings a year. Knowledge gained at the meetings is reported to AASHTO and the AASHTO Research Advisory Council and has resulted in significant coordination of Canadian and U.S. Research activities.

LOCAL HIGHWAY FINANCE ESTIMATES

Transportation Research and Development Bureau researchers developed a sampling plan for Data Services Bureau to collect local highway finance data needed to file the Local Highway Finance Report (FHWA-536). The sampling plan enabled estimation of all needed receipt and disbursement amounts by only inspecting a small percentage of local entities (cites, towns, and villages). Research staff analyzed the collected data and provided Data Services Bureau with all the needed estimates and their margin of error. Considerable time and effort was saved by implementing this method, and it will continue to be used in the future.

MATERIALS LABORATORY INFORMATION MANAGEMENT SYSTEM (LIMS)

The Materials Information Systems Group put into use additional LIMS applications for high strength bolts, Portland Cement, precast concrete product testing, testing of release agents, and some properties for asphalt sealers. The applications , which automate repetitive tasks and give faster response times to the Bureau's clients, allow for the input of all test results and material approval status. They also eliminate the time intensive task of completing paper test reports as all data is kept only in electronic format. The applications provide easy access for Bureau staff to the status of the samples, test results, query functions, and result reporting.

PERFORMANCE GRADED BINDER TESTING

The Materials Bureau Chemistry Laboratory set up a fully operational Performance Graded Asphalt Testing Laboratory and established the proficiency of two technicians in performing these new tests which are an integral part of the *SUPERPAVE* program developed by SHRP.

While the major equipment items were provided by FHWA through the Pooled Fund purchase program, laboratory personnel obtained necessary auxiliary items and modified laboratory areas to accommodate the installation of the new equipment. Technician proficiency was accomplished through an extensive testing program involving a reliability study, testing of PG Binder from 1995 pilot projects, round robin/split sample testing with industry and other laboratories and participation in the American Materials Reference Laboratory proficiency sample program.

Quality Assurance for planned *SUPERPAVE* implementation, will require more training and laboratory equipment to provide the required program support capacity.

FHWA PROCESS REVIEW OF GEOTECHNICAL ENGINEERING BUREAU

A status summary of the implementation of the 11 Geotechnical Engineering Bureau items flagged by FHWA as needing improvement was submitted both to the Regional and Division FHWA offices for their information. These items of improvement were vigorously addressed during this year and are nearing completion. FHWA personnel indicated that such feedback on their process reviews from other State agencies is a rare occurrence.

ASPHALT CONTENT DETERMINATION BY THE IGNITION OVEN METHOD

Ignition ovens represent a new technology which may simplify the determination of asphalt content production samples of approved HMA mixes. As the name suggests, they work on the principle of oxidation and vaporization of the asphalt fraction; followed by a comparison of pre/post ignition weights.

The Materials Bureau obtained two different types of ignition ovens for evaluation from the FHWA under the Priority Technology Program. A NCAT and a Gilson ignition oven were delivered during October 1995. The NCAT ignition oven was installed in the Region 1 Materials Lab and the Gilson in the Region 2 Lab. Both ovens are presently operational.

The asphalt content test results obtained from each type oven will be compared during the 1996 Construction season. Three projects will be selected that are producing HMA top course. Ten 20 kg samples will be taken from each project at a frequency of one sample per day from the production facility and quartered into representative portions. One portion of each sample will be tested to determine asphalt content using the Gilson oven, the NCAT oven, and by the currently used Reflux extraction procedure. When each sample is obtained, comparison asphalt contents will be determined by the Department from the HMA plant automation/recordation. All test results will be statistically analyzed. If the results of this evaluation are positive, NYSDOT plans to purchase additional ignition ovens for the remainder of the Regional Labs to replace the Reflux extractors which use solvents with usage and disposal difficulties.

MAJOR TEAM ACCOMPLISHMENT

A multi-discipline team from the Geotechnical Engineering Bureau provided a preliminary geotechnical engineering evaluation of two proposed alternative industrial development sites (Mikasa China and Crystal Transshipment) at Stewart International Airport. This team which consisted of representatives from Terrain Reconnaissance, Geology, CADD, GIS, and Boring Log Automation completed a comprehensive evaluation report in one and a half days. The report summarized information gathered from a variety of sources and drew from 50 years of Bureau expertise in performing the preliminary soils evaluations which concluded that the sites were capable of supporting the proposed development.

RE-EVALUATION OF ROCK SLOPES

All rock slopes (578) deemed "significant" (originally rated 300 or more) have been re-evaluated by Engineering Geologists in accordance with the procedure contained in the latest Rock Slope Rating Manual. In addition, a considerable number of "new" slopes have been rated and entered into the updated inventory database. There remains approximately 1100 original inventory rock slopes rated less than 300 which must be re-evaluated as time and geotechnical personnel permit.

The latest version of the Rock Slope Rating Manual is ready for publication. This version was completed with considerable statistical assistance by personnel from the Transportation Research and Development Bureau.

IMPLEMENTATION OF NEW TECHNOLOGY

Geotechnical Engineers developed new specifications and construction details were prepared and construction evaluations progressed for the implementation of the following new technologies: Geosynthetic Reinforced Earth Structures (GRES); Soil Nailed Walls and; The Use of Styrofoam As Lightweight Embankment Fill.

ULTRASONIC DETERMINATION OF CULVERT WALL THICKNESS

Corrosion of metal culverts is of considerable concern, and a means of assessing and rating corroded culverts was needed. A Panametrics 25 DL ultrasonic thickness gage was recommended by the Benet Weapons Laboratory at the Watervliet Arsenal for this purpose. Materials and Transportation Research and Development Bureau engineers developed miscellaneous equipment and testing procedures to make the equipment field worthy by providing portability, reliability, and ease of use in the measurement of corroded metal culverts. The Panametrics gage utilizes a bubbler to provide water flow to the immersion transducer to facilitate thickness measurements on pitted surfaces in and out of water. Computer software allows the user to download, print, and process data. During measurements, water flows through a small cone attached to the tip of the transducer, to provide a medium between the transducer and the pitted surface. The sound wave reflection time interval between the back and front walls of the cross section is measured and correlated to thickness. The gage and transducer measures thickness down to 0.5 mm, with resolution up to 0.025 mm. This equipment was also used in the measurement of corroded box beam guide rail. The equipment has proven to be an effective means of measuring thickness of corroded metal. Training in the use of the equipment will be offered to Structures Division personnel during the summer of 1996.

STANDARD SIZES OF ELASTOMERIC BRIDGE BEARINGS

Materials staff are coordinating an effort to eliminate Steel Laminated Elastomeric Bridge Bearing testing from the critical path of a structure project. Using a proposal from a structural steel erector, a goal has been developed to consolidate bearing sizes into "standard sizes." Work is currently proceeding with the Structures Division to develop standard sizes. The current Quality Assurance procedures will then be revised to accept bearings on a stock lot basis, rather than a project basis. A stock of previously tested standard sized bearings could be used immediately, eliminating testing and non-compliance project delays.

PHYSICAL LAB FLOOR REPAIRS

A large program of magnesium sulfate soundness testing of aggregate has been carried out by the Materials Bureau in a laboratory facility that was designed nearly 40 years ago. Through the years, water and salt solution collected on sections of the floor and due to improper drainage, caused leakage onto equipment in the lab below. Materials Bureau staff arranged, through OGS, to repair the damaged floor, ceiling and wall and redesign the drainage to prevent future problems.

METRIC CONVERSION COORDINATION

The close of the 95/96 fiscal year marked the fourth year of the Technical Services Division's formal coordination of the Department's conversion to the metric system.

Beginning with the initial assessment of the impact of conversion and development of a formal Department metric conversion policy, Department wide effort has lead to the first letting of a fully metric project in October 1995. Significant progress has been made in converting forms, manuals, procedures and automation to support metric design and construction. Currently, over 3,000 people have been trained to be aware of and to handle technical metric activities. Metric construction will begin this season, and the Department will begin the transition to all metric projects.

Presently, 56% or 497 projects in all phases of design are metric. The 1995 Standard Specification book is totally metric. Fifteen metric projects have been let, among them, the first kilometer of the Route 9A projects. Additional metric projects will appear in and increase in lettings from now on. A cutoff date for no longer supporting 'english' projects in being determined.

Last fall's National Highway System legislation delayed the original September 30, 1996 FHWA deadline, that the Department was on schedule to meet. This left the conversion schedule up to individual states. The Department's policy to continue metric conversion "so as not to delay the capital program and not prolong the period of dual use" is mirrored by almost all other state DOT's who are also on or ahead of FHWA's original metric conversion schedule.

The construction industry is prepared to use metric measures. Recently completed metric training seminars co-sponsored by the Associated General Contractors, the Empire State Concrete and Aggregate Producers Association and the Department have trained about 600 contractors, materials suppliers and private engineers in metric awareness.

Coordination activities through the Department's Metric Conversion Implementation Committee and the Office of Engineering Metric Conversion Subcommittee is expected to decrease as groups conversion plans and activities are completed and metric becomes the Department's everyday standard.

II. GOALS

A. 96-97 Goals

Three new and seven carry over goals are listed below. A detailed Goal Statement for each is in the Appendix.

96- 1 Hot Mix Asphalt Plant QC/QA
96- 2 Precast Concrete QC/QA
96- 3 Development of a Rehabilitated Pavement Overly Thickness Design Manual and Implementation of the Falling Weight Deflectometer
96- 4 Comparison of Drilling Methods from an Engineering and Cost Benefit Perspective
96- 5 Quality Assurance of Drilling Programs
96- 6 Granular Materials Process Review
96- 7 Geotechnical Engineering Program Quality Assurance
96- 8 Organization Structure to Implement Expanded Research, Development and Technology Transfer Program
96- 9 Laboratory Performance Measures
96-10 Materials/Product Stock Lot Basis of Acceptance Review

B. 95-96 Goals

Eleven formal goals appeared in the Division's 95-96 Operational Plan. The following is the status of these goals.

95-1 HOT MIX ASPHALT PLANT QUALITY CONTROL/QUALITY ASSURANCE

This goal, which began in 1992, continues the Department's commitment to change to a performance specification approach.

Status: On Schedule. The findings from the pilot projects were incorporated into a revised Quality Control/Quality Assurance specification. After review and comments by industry and approval by the FHWA plans are to begin a phased in implementation beginning with projects in the May 23, 1996 lettings. A performance review will complete this goal after the close of this year's construction season.

In addition, a QC/QA technician certification course has been developed and implemented at Alfred State College. Hot Mix Asphalt plant technicians, representing both the producer and the Department, participate in this required certification program.

95-2 *SUPERPAVE* IMPLEMENTATION (BINDER)

This two year goal begins the implementation of the specification for the new Performance Graded Asphalt Binder.

Status: Complete. This year, laboratory testing proficiency has been completed, specification implementation coordinated with the Northeast Asphalt User/Producer Group and binder implementation is included as part of the *SUPERPAVE* implementation plan.

95-3 DEVELOPMENT OF A REHABILITATED PAVEMENT OVERLAY THICKNESS DESIGN MANUAL AND IMPLEMENTATION OF FALLING WEIGHT DEFLECTOMETER (FWD)

This two year goal is to develop a reliable overlay design procedure for pavements and implement the Falling Weight Deflectometer.

Status: Behind Schedule. The time lines of this goal have been revised to expand it based on findings by the goal team and a national technical working group. Rather than developing in house design equations, the current AASHTO overlay design equation will be utilized. These will be refined as pavement performance and FWD structural data are gathered.

The development of the pavement overlay thickness design manual will continue, with future plans to automate the procedure. A current proposal is to enlist the needed resources of the Research Consortium to complete development and automate the manual.

95-4 DEVELOPMENT OF A FIVE YEAR PERFORMANCE MONITORING PROGRAM FOR BOTH NEW AND RECONSTRUCTED PAVEMENTS AND REHABILITATED PAVEMENTS AND DETERMINE RESOURCE NEEDS TO ACCOMPLISH SAME

Status: Complete. The implementation of the pavement monitoring program will provide vital feedback to continuously improve forecasting of pavement performance and the remaining service life of the pavement and supporting structure under a variety of conditions. Central Office and Regional resources are necessary to implement this goal.

95-5 QUALITY ASSURANCE OF DRILLING PROGRAM

There are two objectives for this goal. First, to define and document the processes and procedures for producing a high quality boring log. Second, to create an environment for communication between the Design Engineer and the Drillers in the field.

Status: Behind Schedule. The initial work on preparing a draft document on what should be expected in a quality boring log is in progress. This goal work is planned to continue and be completed in 1996.

95-6 GRANULAR MATERIALS PROCESS REVIEW

This goal initiates a change to have the granular materials industry manage Quality Control of their product, allowing the Department to concentrate on its Quality Assurance role.

Status: Behind Schedule. Meetings with industry continue, to develop a draft of QC/QA improvements to the current procedure. This goal work will continue this year.

95-7 DEVELOP DATA MANAGEMENT PROCEDURES

This goal is to develop a uniform procedure to collect, index and store Research project data. Procedures for referencing, updating and backup in a computer environment is also developed.

Status: Complete. The procedure has been developed, communicated to Research staff and institutionalized by adding it to the Transportation Research Bureaus' Policy and Procedure Manual.

95-8 ORGANIZATION STRUCTURE TO IMPLEMENT THE EXPANDED RESEARCH DEVELOPMENT AND TECHNOLOGY TRANSFER PROGRAM

To manage the expanded role of the Transportation Research and Development Bureau, a number of organizational groups will be established by work on this goal. A Research Executive Board, a Research and Development Council and an Advisory Panel will be formed from within and outside (academia, industry) the Department.

Status: Behind Schedule. After delays due to Department restructuring, members of the Executive Board have been designated and a briefing will be conducted to inform Board members of program procedures and protocols. The first Board meeting is scheduled in June to outline research emphasis areas. This goal will continue, to complete other parts of the organization structure.

95-9 LABORATORY PERFORMANCE MEASURES

This goal is to develop performance measures for the Materials Bureau Chemistry and Physical Laboratories. The measures will quantify performance and serve to manage resources.

Status: On Schedule. Performance Measures have been established in cooperation with laboratory staff. Measures are currently in use in an eight month pilot study. This goal will continue with final version implementation planned for 1997.

95-10 PROGRESS QUALITY ASSURANCE ANALYSIS (IN-PLACE DENSITY OF RUT AVOIDANCE HOT MIX ASPHALT

Monitoring performance of a new Hot Mix Asphalt mixture used to prevent rutting and shoving by traffic is the purpose of this goal.

Status: Complete. Rut avoidance projects have been identified, information and data gathered, analyzed and overall performance assessed. Currently a report is nearing completion.

95-11 PRECAST CONCRETE QC/QA

This goal is to examine the applicability of the QC/QA process for the manufacture of precast concrete products, and develop revised procedures based on end result specifications for appropriate precast products.

Status: Behind Schedule. A draft QC/QA plan is being prepared which will then be reviewed by the goal team and industry. Implementation will be progressed later this year after reviews are completed.

APPENDIX A - IMPROVEMENT GOAL STATEMENTS

1996/1997 OPERATIONAL GOALS

96- 1 Hot Mix Asphalt Plant QC/QA

96- 2 Precast Concrete QC/QA

96- 3 Development of a Rehabilitated Pavement Overlay Thickness Design Manual and Implementation of the Falling Weight Deflectometer

96- 4 Comparison of Drilling Methods from an Engineering and Cost Benefit Perspective

96- 5 Quality Assurance of Drilling Programs

96- 6 Granular Materials Process Review

96- 7 Geotechnical Engineering Program Quality Assurance

96- 8 Organization Structure to Implement Expanded Research, Development and Technology Transfer Program

96- 9 Laboratory Performance Measures

96-10 Materials/Product Stock Lot Basis of Acceptance Review

Technical Services Division
GOAL STATEMENT

Goal Name: #96-1 Hot Mix Asphalt Plant QC/QA

As Is: This is a continuation of Goal #95-1 of the same title. The original goal, started in SFY 92-93, was for the development and implementation of a contractor QC and Department QA acceptance system for Hot Mix Asphalt during the 1996 construction season.

Desired State: The contractor performs quality control (QC) sampling, testing and inspection while the Department performs quality assurance (QA) sampling, testing and inspection.

Team Leader: Thomas Wohlscheid

Team: Jack Sprague (R2), Milt LaSalle (R7), Les Ackerman (R8) and David Whiteley.

Specific Goal for SFY 96-97: Monitor QC/QA projects in 1996 and include refinements as necessary.

Rationale: The Department made a commitment in 1991 to change the quality assurance program for HMA from a "methods approach" to a "QC/QA" approach. The reasons for the change are to (1) improve or maintain product quality, (2) establish clear lines of responsibility between the contractor and the Department for product quality, and (3) seek operating cost reductions.

Under the new system, the contractor and supplier will be responsible for the mix design, sampling, testing and controlling the quality of the mixture through placement (QC). The Department will monitor these activities and perform testing for acceptance (QA). Payment will be based upon the percentage of material which is within the specification limits. This percentage will be determined statistically. Constituent materials will be Department approved as in the past.

Technical Services Division
GOAL STATEMENT

Goal Name: #96-2 Precast Concrete QC/QA

As Is: This is a continuation of Goal #95-11 of the same title. The quality assurance procedures for precast concrete vary between products. Some procedures rely heavily on manufacturer's quality control while others rely mostly on sampling, testing and inspection by Department resident plant inspectors. A new specification, 704-03 Precast Concrete, General, that combines products having similar fabrication requirements was recently implemented. No changes were made to the basis of acceptance for the products.

Desired State: Utilize quality control by the manufacturer and quality assurance by the Department for assuring acceptable quality in precast concrete units to the extent that is reasonable.

Team Leader: Robert Awramik

Team: W. Snyder, K. Clements, P. Melas (R1), R. Ziemniak (R4)

Specific Goal for SFY 96-97: Examine the applicability of the QC/QA process to the manufacture of precast concrete products, and develop revised procedures based on end result specifications for precast concrete median barriers and drainage units.

Rationale: The use of precast concrete products by contractors has increased significantly during the past decade and it will continue in the foreseeable future. This increased use has placed a much higher demand for inspectors to cover the manufacturing operations under the standard quality assurance programs. The QC/QA process may be a more effective method for assuring acceptable quality of precast concrete products.

Technical Services Division
GOAL STATEMENT

Goal Name: #96-3 Development of a Rehabilitated Pavement Design Manual and Implementation of FWD

As Is: This is a continuation of Goal #95-3 which began in 1994. This goal is to improve Volume 1, Pavement Evaluation and Volume II, Treatment Selection of The Pavement Rehabilitation Manual, prepared by the Materials Bureau and last revised on February 1992 and May 1993 respectively. These procedural manuals evaluate the conditions of existing pavements and utilize this information to form the basis for making decisions on rehabilitation alternatives taking into consideration expected service life and life-cycle cost analyses. Treatment selections are based on limited past experience with traffic volumes up to 35,000 AADT and 5 percent trucks.

Desired State: A rational method of determining pavement overlay thickness treatment selection based on an evaluation of the pavement structural capacity and prediction of future truck traffic over the desired service life.

Team Leader: Don Arcari

Team: Robert Burnett, Rodney Delisle, Gary Douglas, Ron Sines, Bill Snyder, Bill Cuerdon, Wes Yang, Julian Bendaña, Makbul Hossain, Carol Hennessy, Dick Obuchowski, Rick Morgan

Specific Goal for SFY 96-97: Develop a method of designing overlay thicknesses for both rigid and flexible pavements using the AASHTO overlay design procedure or a mechanistic-empirical design procedure. It is expected that the Falling Weight Deflectometer (FWD) will be used to determine the pavement's structural capacity by providing layer moduli, based on deflection data. Calibrate and implement FWD as a design tool, by September 15, 1996. Produce a final rehabilitation pavement overlay thickness design manual for implementation by December 31, 1998, considering in-situ pavement recycling and improvement opportunities.

Rationale: The quality of decision making concerning the need to rehabilitate or reconstruct our existing pavement systems is highly dependent on our ability to analyze their existing structural capacities and future capacities under different rehabilitation treatments. This design ability, along with prudent life-cycle cost analyses, will form the building blocks for innovative thinking (rational approach) concerning the effects of improved future materials and construction practices in creating higher quality pavement structures.

With a rational and well-calibrated overlay thickness design procedure, engineers can predict service lives more accurately. This will not only result in more accurate project-level life-cycle economic analysis, but also more accurate network-level capital programming.

Technical Services Division
GOAL STATEMENT

Goal Name: #96-4 Comparison of Drilling Methods from an Engineering and Cost Benefit Perspective

As Is: The Subsurface Exploration Section has recently begun an initiative to train Statewide Drill Crews in the concept of mud drilling techniques. Based on experience obtained to date, there appears to be a significant influence on sample quality, when performing traditional casing advancement methods in loose silts and sands under the water table versus mud drilling.

Desired State: The objective of this goal is to investigate the influence of various drilling techniques as it relates to the quality of soil samples. The influence of the quality of subsurface information on the design, analysis, and the cost of highway structures will be reviewed. After synthesizing the information, a recommended guide describing what drilling techniques should be applied under given field conditions for specific highway structures will be prepared for the Statewide Drill Crews.

Team Leader: John Reagan

Team:

Drilling Practice and Techniques	Ron Hoyt Paul Salchert Regional Drillers
Impact on Design and Analysis	Ray Schnore Phil Walton Tom Carlo
Document Preparation & Support	Bob Strohmaier Tony Minnitti

Specific Goal for SFY 96-97: The specific goal for the first year is to obtain sufficient field data to compare the different drilling techniques. Design groups will review the data and evaluate its impact on different design requirements. Recommendations will be made to issue guidelines on where and when to use specific drilling techniques.

Rationale: The design, construction, and long term reliable performance of highway systems is dependent upon a quality subsurface exploration program. This goal will improve our capabilities by studying the influence of different drilling techniques and their impact on designs. By establishing guidelines to assist the Statewide Drill Crews, we will bring improved quality to give our design engineers the best subsurface information possible.

Technical Services Division
GOAL STATEMENT

Goal Name: #96-5 Quality Assurance of Drilling Program

As Is: This is a continuation of Goal #95-5 of the same title. Providing quality Drilling Services to carry out all aspects of the Capital Program has been a major goal of the Geotechnical Engineering Bureau and the Regional Geotechnical Sections for over fifty years. Over the years numerous changes have taken place in drilling technologies and in the manner in which we provide support to the capital program, primarily through obtaining quality subsurface information as represented on the boring log. A number of informal and formal processes are in place which describe how we deliver a quality subsurface drilling log. There is no formalized plan that describes the specific steps and checkpoints to guarantee a high quality log. Several Senior Geotechnical engineers have also observed that there is very little interaction between the drillers who provide the "service" and design engineers who are the "customers".

Desired State: There are two distinct objectives for this goal. The first objective is to create a document that defines the processes and procedures for producing a high quality boring log. The document should identify all the existing quality control and quality assurance checks that are being performed. The final report should prioritize areas that require detailed investigation and improvements in the quality process. The secondary objective is to develop and implement a field visit process. The process should be designed to communicate the engineering significance for the subsurface exploration program from the perspective of the "customer" (i.e. design engineer) and allow the driller to demonstrate the actual working effort including suggestions of innovative procedures involved in obtaining the required information.

Team Leader: John Reagan

Team: Phil Walton, Ray Schnore, design engineers representing Roadway Foundations and Structure Foundation Sections, a Regional team consisting of a Regional Geotechnical Engineer and members of the drilling forces, a Bureau Engineer responsible for preparing the boring log process report and a Bureau Engineer to develop and implement the field process review goal.

Specific Goal for SFY 96-97: Complete the process and procedure manual for producing a high quality drill log. Begin the implementation of field visits for Design Engineers to improve communication between Regional drilling staff and the requirements of design criteria.

Rationale: The fundamental building block to creating a quality organization is an in-depth understanding of the processes and procedures for producing the desired end product. The first objective of this goal is to precisely define those existing processes and identify on a priority basis the areas that could yield the greatest benefit, if improved. This progress report can then serve as the cornerstone for the development of a quality assurance plan for producing a quality boring log.

The second goal is an action oriented goal designed to re-implement procedures we used to do but just seemed to slip away. The benefits of providing communications between the drillers and engineers should include improved morale and an appreciation for the specific roles of each party, a clearer understanding of what limitations exist when performing subsurface explorations, and a higher quality end product, the boring log.

Technical Services Division
GOAL STATEMENT

Goal Name: #96-6 Granular Materials Process Review

As Is: This is a continuation of Goal # 95-6 of the same title. State provides 100% of the quality control and quality assurance testing for granular materials used in construction.

Desired State: Uniform management by state involving industry in quality control of granular materials and state in quality assurance of granular materials. Reduce workload in state, improve effectiveness of quality control procedures by putting them in the hands of the suppliers.

Team Leader: Stephen E. Lamb

Team: Troy Soka, Joe LiBritz, Stephen Mabin, R. H. Harms, Robert Burnett, David Hamling (ESCAPA), John Neidhart and Frank George (AGC)

Specific Goal for SFY 96-97: Review existing quality control and quality assurance program and develop costs of process for granular material used in construction. Prepare final quality assurance plan by March 1, 1997.

Rationale: Obtaining quality construction granular materials is essential to ensuring design life performance of the Department's projects. Involving industry in the process of quality control should result in reduced rejection of granular materials on construction projects and enhanced partnering.

Technical Services Division
GOAL STATEMENT

Goal Name: #96-7 Geotechnical Engineering Program Quality Assurance

As Is: Customer satisfaction with the Geotechnical Program has not been formally collected for some time. Dissatisfaction is usually noted through singular incidents and is treated as such. Our customers are not fully aware of our capabilities and our requirements for delivery of our products. Many of our items and solution techniques are so specialized that EIC's and designers cannot be familiar with all of them.

Desired State: Conduct a formal Customer Satisfaction Survey. Develop a menu of our services and requirements. Produce informative pamphlets about our items and techniques as reference material for regional personnel.

Team Leader: Bob Burnett

Team: Don Dwyer, Dick Grana, Steve Heiser, Zeke Kyfor, Phil Walton

Specific Goal for SFY 96-97: Send out a paper Satisfaction Survey to all 11 Regions. Meet with them face-to-face to discuss the results. Ferret out problems with policies and procedures and propose solutions. Refine and implement those solutions. Develop a "menu" of Geotechnical Engineering Bureau services and the "cost" to the Regions of those services (time and information required). Distribute that menu through the Regional Geotechnical Engineers. Put together a list of topics of items and techniques that we recommend to fix geotechnical problems. Assign those topics to various Bureau experts to be written up in short pamphlets, in a standard format. Distribute those pamphlets via the Regional Geotechnical Engineers to designer or EIC's who have a need for information on that topic.

Rationale: This will formalize the information flow between ourselves and the Regions. It will lead to fewer misunderstandings, better cooperation, and better implementation of our recommendations. It can be done quickly with a minimum of resources. It demonstrates to the Regions our willingness to be open with them and to assist them.

Technical Services Division
GOAL STATEMENT

Goal Name: #96-8 Develop the Organization Structure Needed to Implement the Expanded Research, Development & Technology Transfer Program

As Is: This is a continuation of Goal #95-8 of the same title. The original goal started in SFY 95-96 for development of the organization structure. Due to overall organizational restructuring, implementation of a portion of the goal was delayed. New management has approved the program. Executive members are designated.

Desired State: Completion of implementation of organization structure to facilitate execution of the RD&T program.

Team Leader: Ossama (Sam) Abd Elrahman, Transportation Research & Development Bureau

Specific Goal for SFY 96-97: Continue to lay the foundation of the new RD&T for SFY 96-97 program. Establish operational mechanism for the program as follows:

1. Form Advisory Panel (AP). Invite members of Academia, Industry, FHWA/FTA, etc., to serve on the panel.

2. Form the Technology Transfer Team and Research Coordination Group of TR&DB.

3. Form the Research and Development Council (RDC).

The goal is to ensure that all operational mechanisms for the program are in place, to execute the forthcoming research cycle and technology transfer functions.

Rationale: Federal regulations pertaining to State RD&T programs have entailed establishing an interactive process for identification and prioritization of research, and creating a management process, to ensure effective conduct and implementation of research results.

To meet those standards, TR&DB will seek the participation of several committees, the Research and Development Council (RDC), the Advisory Panel (AP), and the Technical Working Group (TWG), yet to be established. The involvement of those Committees is deemed crucial to establishing an interactive process. TR&DB will pursue the creation of these Committees prior to the initiation of the research cycle. To establish a management process, a task force comprised of TR&DB staff will ensure the launching and functioning of the program according to established policies and procedures.

Technical Services Division
GOAL STATEMENT

Goal Name: #96-9 Laboratory Performance Measures

As Is: This goal continues Goal #95-9 of the same title. Quality assurance procedures for many materials used in construction projects require timely sampling and testing at prescribed frequencies. Adequate resources are sometimes not available to accomplish this laboratory testing work along with other testing requests for design of rehabilitation projects and materials development work.

Desired State: The Materials Bureau should have a program that properly assesses utilization of resources within the laboratories, establish resource needs, and adjust testing programs based on objective data.

Team Leader: David W. Bernard

Team: J. Finke, Chemical Laboratory, W. Koniowka, Physical Laboratory

Specific Goal for SFY 96-97: Using the method developed in 95-96, monitor pilot studies and include refinements. Use to estimate staff needs to perform testing programs accurately and efficiently in the Chemical and Physical Laboratories.

Rationale: The laboratories perform tests in support of the construction program, design of rehabilitation projects, and new product evaluations. Accurate and timely test results are essential to satisfy needs of the Department's regional and central office groups. To assure that the desired amount and quality of testing is achieved, a laboratory management tool is needed to address the variables - capacity of resources, utilization of resources, turn around time for results, and characteristics of testing programs. The outcome of the goal should provide a process that quantifies and communicates needs for resources; and it should provide data on which to base decisions for optimizing efficiency and effectiveness of the resources.

Technical Services Division
GOAL STATEMENT

Goal Name: #96-10 Materials/Product Stock Lot Basis of Acceptance Review

As Is: Construction materials are accepted on Department projects in a variety of ways. Acceptance procedures in use are: Manufacturer's Certification, Approved List, Engineer Inspection, Procedural Directives and Stock Lot. Materials or products accepted on the basis of stock lot are sampled and shipped to Materials or Soils Laboratories in the Main Office for testing. The lot of material is released for use upon attaining satisfactory results. There are about 75 materials or products accepted on a stock lot basis.

Desired State: Be confident that material or products accepted based on stock lot testing are balanced, weighing material quality and testing effort, against the desired performance of the material or product.

Team Leader: Richard Obuchowski

Team: Section Leaders in the Geotechnical Engineering and Materials Bureaus participating in the audit of stock lot materials/products, basis of acceptance review.

Specific Goal for SFY 95-96: Audit the materials/products accepted on stock lot testing. Provide recommendations to program managers on changes in product testing rates or quality assurance procedures that assures the desired level of materials/products performance and minimizes testing.

Rationale: Need for changes to the testing for materials/products accepted on the basis of stock lot acceptance is not made on a regular basis. An internal audit is desirable for evaluating the utilization of resources.